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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/371,973	08/10/1999	JAMES B. PONZO		9873

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EXAMINER	
DOROSHENK, ALEXA A	
ART UNIT	PAPER NUMBER
1764	10

DATE MAILED: 10/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/371,973	PONZO ET AL.	
	Examiner	Art Unit	
	Alexa A. Doroshenk	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 March 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 17-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 17-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1--4, 6-11, 13-15, 17-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al (US 6,183,703 B1) in view of Ashmead et al (5,690,763).

With respect to claims 1, 3 and 15, Hsu et al disclose an apparatus comprising a plurality of thin metal plates (12 and 14) in a stacked contiguous relation (see fig. 3), each having a surface of catalyst material (36) (see fig. 2A, 2B, 2C) and flow-through holes (16) positioned such that fluid flows axially through said plates (see fig. 1).

Hsu et al are silent as to the plates being etched.

Ashmead et al also disclose an integral structure of laminae construction teaching that the catalyst plates can have catalyst deposited on the surface or placed in etched reactor channels (col. 13, lines 1-4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide etched channels for catalyst in the thin plates of Hsu et al as it is merely the selection of functionally equivalent means of placing catalyst on a thin metal plates known to the art.

With respect to claims 2, 9 and 17, Hsu et al discloses wherein a flow adjustment element (80) (reads on metering plate) is provided between groups of thin metal plates to provide uniformity of flow through the apparatus (col. 10, lines 15-22).

With respect to claims 3, 10, 18 and 21, Hsu et al further discloses that any suitable design of flow adjustment element can be used to restrict the flow at selected and determinable rate (col. 10, lines 15-22). In stating thus, Hsu et al has recognized the design of the flow adjustment element to be a result effective variable. A person having ordinary skill in the art would have found it obvious to determine the optimum design or designs of such a result effective variable recognized in the art, as it has been held that such a discovery is ordinarily within the skill level of the art. *In re Boesch and Slaney*, 617 F2d. 272, 276 [205 USPQ 215, 219] (CCPA 1980).

With respect to claims 4, 11 and 19, Hsu et al discloses lateral flow of fuel through and between the plates, but does not demonstrate wherein flow-through holes are axially offset.

Ashmead et al disclose wherein axially offset holes also result in lateral flow of material through a laminate reactor (see fig. 4, 5 and col. 9, lines 47-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to offset the flow-through holes of Hsu et al as a matter of engineering design choice which is functionally equivalent to axially aligned flow-through holes, as known in the art and as demonstrated by Ashmead et al.

With respect to claims 6 and 13, both Hsu et al (see fig. 3 and 4) and Ashmead et al (see fig. 1-3, 6-7 and 8-17) disclose wherein a shape of the thin metal plates can be substantially circular.

With respect to claims 7and 14, both Hsu et al (see fig. 1 and 3) and Ashmead et al (see fig. 1 and 4-5) disclose wherein the metal plates are bonded to form a monolithic stack.

3. Claims 5, 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al in view of Ashmead et al as applied to claims 1, 8 and 15 above, and further in view of Koga et al (5,270,127).

The modified apparatus of Hsu et al discloses all of the claimed structure as discussed above, but are silent as to support columns in the etched portions of the thin metal plates.

Koga et al teach a stacked thin plate reforming apparatus which etched thin metal plates with catalyst material (see fig. 7) and that such plates also comprise support columns (74) which function to support and maintain spaces between plates for flow there through (col. 10, lines 15-23). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide such supports in the modified apparatus of Hsu et al in order to promote stability of construction and ensure that flow passages are open for reactant flow there through.

Response to Arguments

4. The objection to the drawings is withdrawn due to applicant's response filed July 8, 2002.

5. Applicant's arguments filed March 25, 2002 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a plurality of catalytic plates arranged in a contiguous manner) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The examiner notes that a plurality of thin metal plates (both elements 12 and 14 are thin metal) are claimed, not "catalytic plates". Additionally, each plate is in contact with catalyst (fig. 2A and col. 4, lines 64-66) and stacked contiguously (col. 5, lines 28-33).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., flow adjustment element between groups of plates having the same function) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant argues that Hsu does not teach or suggest the use of multiple metering plates of different design.

The examiner respectfully disagrees. Hsu teaches that any suitable design of flow adjustment element can be used, thereby recognizing that the metering plate design is a result effective variable. Absent a showing of superior results because of the selection of a specific arrangement of the result effective variable, selection of a particular flow adjustment arrangement is within the skill of the art.

Applicant argues that Hsu in view of Ashmead does not provide for off-set flow through holes.

The examiner respectfully disagrees with applicant. Hsu discloses wherein it is required that reactant pass through flow-through holes in order to pass over the plates and through the catalytic material (col. 5, lines 28-33). Ashmead discloses wherein flow through passages are off-set so that fluid travels through the horizontal pathways (such as those comprising catalyst) in order to promote flow through the catalyst instead of straight through the through-passage and thus not reacting with the catalyst (col. 9, lines 47-65). The examiner holds that it would have been obvious to one of ordinary skill in the art at the time the invention was made to off-set the through holes of Hsu, as taught by Ashmead, in order to encourage reactant flow through the catalyst passages in order to promote the operation of the apparatus.

Applicant argues that Hsu does not disclose wherein the plates are bonded and therefore do not form a monolithic stack.

The examiner respectfully disagrees with applicant. Not only is the stack bonded together by a fastener (fig. 3) but also Hsu discloses the plates as in intimate contact (col. 4, lines 64-66) and therefore reads on the "monolithic" definition of being bonded together.

Applicants argue that the conductive plates of Hsu would have to be removed to possibly read on the instant claims and would therefore destroy the reference.

The rejection as presented by the examiner, as discussed above, does not require such removal of plates and therefore the argument is moot.

Applicant argues that Koga not discloses support columns but not unetched portions forming support columns as claimed.

The examiner that the columns (74) of Koga are not etched portions of the plate and therefore read on the claim. Additionally, since the claims are directed toward apparatus, only structural elements are given patentable weight in the claim and therefore how the structural elements are formed has no bearing on the fact that Koga does indeed have support columns.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 703-305-0074. The examiner can normally be reached on Monday - Thursday from 8:30 AM - 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

JERRY D. JOHNSON
PRIMARY EXAMINER
GROUP 1100

AAD
October 9, 2002